



Department of Ecology
Water Quality Program
JUN 10 2005

State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N Olympia, WA 98501-1091 (360) 902-2222, TDD (360) 902-2207
Main Office Location: Natural Resources Building 1111 Washington Street SE Olympia, WA

June 8, 2005

Kelly McLain
Aquatic Pesticide Program
Supplemental
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

NPDES Permit WA0041009
Annual Report

Dear Ms. McLain:

On 1 June 2005, the Washington Department of Fish and Wildlife submitted the annual report for 2004 activities under NPDES Permit WA0041009. We had identified that we were unable to comply completely with the reporting requirement of S3.A for the following waters treated with rotenone during the autumn of 2004, in Grant County, by the June 1, 2005 deadline. Under S3.E of Non-Compliance by WDFW of the permit, we identified that we would have the remainder of the annual report sent to you by this date.

Enclosed are follow-up reports for WDFW's Post-Treatment Discharge Monitoring Reports for the North Potholes and the Hampton Lake chain in Grant County, treated with rotenone in the fall of 2004, along with all other pertinent documentation as mandated by the reporting requirement under S3.A of NPDES Waste Discharge Individual Permit Number WA0041009.

We had enclosed, in our June 1, 2005 communication, a copy of the amended FSEIS for the lakes proposed for treatment in the fall of 2004 and the Spring of 2005, including all SEPA comments, results and decisions, as well as the 2005-2006 Lake and Stream Rehabilitation Proposal list. And we had provided you, on May 27, 2005, with the completed SEPA review process regarding the use of Antimycin as a fish toxicant for certain fish management projects.

Please feel free to contact me at 360-902-2711 or email anderjda@dfw.wa.gov with any questions.

Sincerely,



Jon. Anderson
Resident Native Fisheries Manager

Enclosures

cc: Jim Uehara, WDFW Olympia
Kathleen Emmett, DOE Water Quality Program

POST-REHABILITATION REPORT

Hampton Lakes Drainage, including the Pillar-Widgeon Lakes Chain

WATER: *from top of drainage:* Pillar, Snipe, Cattail, Gadwall, Poacher, Lemna, Shoveler, Sago, Hourglass, Widgeon, Upper Hampton, Lower Hampton, Hampton Slough, Hen, Dabbler, and Marie Lakes.

LOCATION: Grant Co.; Sec 19, 30, 31 T17N R29E; Columbia National Wildlife Refuge just south of Potholes Reservoir and about 6 miles northwest of Othello, Washington.

DATE(S) TREATED: October 12-22, 2004

PURPOSE: Reduce numbers of undesirable species of fish and bullfrogs to the extent possible.

LISENCED APPLICATOR: Jeffrey W Korth

LAKE DESCRIPTIONS:

1. WATER: Pillar Lake

Surface acres: 9.7

Depth: average 15 ft; maximum 37 ft

Volume: 116 acre-feet

Weight of Water: 316,256,054 lbs

Connectivity: inlet - subterranean flow, primarily from Potholes Canal Lk, unk.cfs; outlet - intermittent flow ~ 30 yards to Snipe Lake.

2. WATER: Snipe Lake

Surface acres: 4

Depth: average 5 ft; maximum 15 ft

Volume: 60 acre-feet

Weight of Water: 163,088,640 lbs

Connectivity: inlet - intermittent flow ~ 30 yards from Pillar Lake, < 1 cfs; outlet - perennial flow ~ 10 yards to Cattail Lake, < 1 cfs.

3. WATER: Cattail Lake

Surface acres: 10

Depth: average 5 ft; maximum 15 ft

Volume: 150 acre-feet

Weight of Water: 407,721,600 lbs

Connectivity: inlet - perennial flow ~ 10 yards from Snipe Lake, < 1 cfs; outlet - perennial flow ~ 10 yards to Poacher Lake; 1-2 cfs.

4. WATER: Gadwall Lake

Surface acres: 7

Depth: average 10 ft; maximum 59 ft

Volume: 96 acre-feet

Weight of Water: 262,029,080 lbs

Connectivity: inlet - subterranean flow, unk.cfs.; outlet - perennial flow ~ 10 yards to Poacher Lake, 1-2 cfs.

5. WATER: Poacher Lake

Surface acres: 1

Depth: average 5 ft; maximum 10 ft

Volume: 10 acre-feet

Weight of Water: 27,181,440 lbs

Connectivity: inlet - perennial flow ~ 10 yards from Cattail (1-2 cfs) and ~ 10 yards Gadwall (1-2 cfs) lakes; outlet - perennial flow ~ 10 yards to Shoveler Lake; 2-4 cfs.

6. **WATER: Lemna Lake**

Surface acres: 2

Depth: average 5 ft; maximum 10 ft

Volume: 20 acre-feet

Weight of Water: 54,362,880 lbs

Connectivity: inlet - subterranean flow; unk.cfs; outlet - intermittent flow ~ 5 yards to Shoveler Lake.

7. **WATER: Shoveler Lake**

Surface acres: 8.4

Depth: average 5 ft; maximum 60 ft

Volume: 88 acre-feet

Weight of Water: 239,468,485 lbs

Connectivity: inlet - intermittent flow ~ 5 yards from Lemna Lake (< 1 cfs) and perennial flow ~ 10 yards from Poacher Lake (2-4 cfs); outlet - mostly subterranean, but intermittent surface flow ~ 5 yards to Widgeon Lake; < 1 cfs.

8. **WATER: Sago Lake**

Surface acres: 3.5

Depth: average 5 ft; maximum 30 ft

Volume: 50 acre-feet

Weight of Water: 134,944,298 lbs

Connectivity: inlet - subterranean flow, primarily from Potholes Canal, ~ 1-2 cfs; outlet - perennial flow ~ 20 yards to Hourglass Lake; 2 cfs.

9. **WATER: Hourglass Lake**

Surface acres: 2.3

Depth: average 8 ft; maximum 35 ft

Volume: 26 acre-feet

Weight of Water: 71,833,750 lbs

Connectivity: inlet - perennial flow ~ 20 yards from Sago Lake; 2 cfs; outlet - perennial flow ~ 20 yards to Widgeon Lake; 2 cfs.

10. **WATER: Widgeon Lake**

Surface acres: 8.8

Depth: average 8 ft; maximum 38 ft

Volume: 125 acre-feet

Weight of Water: 340,314,210 lbs

Connectivity: inlet - perennial flow ~ 20 yards from Hourglass Lake (2 cfs) and intermittent flow from Shoveler Lake (< 1 cfs), 2 cfs; outlet - perennial flow ~ ¼ mile to Upper Hampton Lake; 3 cfs.

11. **WATER: Upper Hampton Lake**

Surface acres: 68

Depth: average 10 ft; maximum 61 ft

Volume: 839 acre-feet

Weight of Water: 2,279,287,351 lbs

Connectivity: inlet - perennial flow ~ ¼ mile from Widgeon Lake 3 cfs and springs at NE corner due subterranean flow from Potholes Canal; outlet - perennial flow ~ 200 yards to Hen Lake, ~ 5 cfs and intermittent flow ~ 10 yards to Lower Hampton Lake.

12. **WATER: Lower Hampton Lake**

Surface acres: 20

Depth: average 10 ft; maximum 46 ft

Volume: 472 acre-feet

Weight of Water: 1,282,152,398 lbs

Connectivity: inlet - subterranean (unk. cfs) and intermittent (< 1 cfs) flow ~ 10 yards from Upper Hampton Lake; outlet - perennial flow ~ 10 yards to Hen Lake, ~ 3 cfs and perennial flow ~ 5 yards to Hampton Slough, ~ 2 cfs.

13. **WATER: Hen Lake** (estimated after water level lowered ~ 5 feet)

Surface acres: 4

Depth: average 5 ft; maximum 15 ft

Volume: 69 acre-feet

Weight of Water: 186,437,497 lbs

Connectivity: inlet - perennial flow ~ 200 yards from Upper Hampton Lake, ~ 5 cfs and perennial flow ~ 10 yards from Lower Hampton Lake; outlet - perennial flow ~ ¼ mile to Dabbler Lake, ~ 8 cfs.

14. **WATER: Dabbler Lake** (estimated after water level lowered ~ 5 feet)
 Surface acres: 3 Depth: average 2 ft; maximum 5 ft
 Volume: 6 acre-feet Weight of Water: 16,308,864 lbs
 Connectivity: inlet - perennial flow ~ ¼ mile from Hen Lake, ~ 8 cfs; outlet - perennial flow ~ perennial flow ~ 100 feet to Marie Lake, ~ 8 cfs.
15. **WATER: Hampton Slough**
 Surface acres: 1 Depth: average 2 ft; maximum 6 ft
 Volume: 3.4 acre-feet Weight of Water: 9,296,052 lbs
 Connectivity: inlet - perennial flow ~ 5 yards from Lower Hampton Lake, ~ 2cfs; outlet - perennial flow ~ ¼ mile to Marie Lake, ~ 2 cfs.
16. **WATER: Marie Lake** (estimated after water level lowered ~ 6 feet)
 Surface acres: 8 Depth: average 3 ft; maximum 8 ft
 Volume: 24 acre-feet Weight of Water: 65,235,456 lbs
 Connectivity: inlet - perennial flow ~ ¼ mile from Hampton Slough, ~ 2 cfs and perennial flow ~ 100 feet from Dabbler Lake, ~ 8 cfs; outlet - none until lake refills; at full pool, perennial flow ~ 100 feet to Para Juvenile Lake, ~ 11 cfs.

TREATMENT DESCRIPTION:

Water	Date	Actual Rotenone used		
		lbs @ conc.	Liquid	ppm
1. Pillar Lake	Oct 12	880 @ 7.2 %	none	4.0
2. Snipe Lake	Oct 15 & 22	440 @ 7.5 %	2 gal.	4.1
3. Cattail Lake	Oct 15 & 21	550 @ 7.5 %	2 gal.	2.0
4. Gadwall Lake	Oct 15	385 @ 7.5 %	none	2.2
5. Poacher Lake	Oct 19	none	3 gal.	0.9
6. Lemna Lake	Oct 15	110 @ 7.5 %	none	3.1
7. Shoveler Lake	Oct 15 & 19	220 @ 7.5 %	10 gal.	1.8
8. Sago Lake	Oct 14 & 22	220 @ 7.5 %	2 gal.	2.5
9. Hourglass Lake	Oct 14	165 @ 7.5 %	none	2.3
10. Widgeon Lake	Oct 14	715 @ 7.5 %	17 gal	3.6
11. Upper Hampton Lk	Oct 13	1,595 @ 7.2 %	15 gal.	1.1
12. Lower Hampton Lk	Oct 13-14	880 @ 7.2 %	20 gal.	1.1
13. Hen Lake	Oct 13	none	15 gal.	0.7
14. Dabbler Lake	Oct 14	none	5 gal.	
<i>note: all 5 gal sprayed on creek between Hen and Dabbler, flowing into Dabbler and Marie.</i>				
15. Hampton Slough	Oct 13-14	none	15 gal.	
<i>note: mostly sprayed on creek between L. Hampton and Marie, flowing into Marie.</i>				
16. Marie	no direct treatment; dependent upon flow from Dabbler and Hampton Slough.			
Total treatment for Hen, Dabbler, Hampton Slough, and Marie				< 1 ppm

Total powdered rotenone used = 3,355 lbs @ 7.2 % and 2,805 lbs @ 7.5 % and 91 gal of liquid. All powder slurried with lake water, and liquid sprayed in shallow waters.

Detoxification Procedures: Marie Lk used as holding basin until treated waters naturally detoxified.
 - see 'Description of Treatment and Other Comments' for details.

SPECIES OF FISH ERADICATED IN ORDER OF RELATIVE ABUNDANCE:

<u>Water</u>	<u>Species</u>
1. Pillar Lake	Carp, 4-5 age classes; very few rainbow (2 observed, ~16", skinny).
2. Snipe Lake	Yellow perch, mostly small (1,000's), few 10-12"; no rainbow.
3. Cattail Lake	Yellow perch, all small (1,000's); few rainbow, ~15".
4. Gadwall Lake	Few large rainbow, 16-18"; some bullfrog tadpoles.
5. Poacher Lake	Some bullfrog tadpoles. No fish?!!
6. Lemna Lake	Some bullfrog tadpoles. No fish?!!
7. Shoveler Lake	Yellow perch, all small (100's); no rainbow.
8. Sago Lake	Pumpkinseed sunfish; some prickly sculpins; a few rainbow observed. Dead bullfrog tadpoles observed.
9. Hourglass Lake	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed. Many dead bullfrog tadpoles observed.
10. Widgeon Lake	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed. Many dead bullfrog tadpoles observed.
11. Upper Hampton Lk	Pumpkinseed sunfish (10's of thousands); some prickly sculpins (100's); very few rainbow (<10 observed, ~16").
12. Lower Hampton Lk	Pumpkinseed sunfish (10's of thousands); some prickly sculpins (100's); no rainbow observed.
13. Hen Lake	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed.
14. Dabbler Lake	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed. Dead bullfrog tadpoles observed.
15. Hampton Slough	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed. Many dead bullfrog tadpoles observed.
16. Marie	Pumpkinseed sunfish; some prickly sculpins; no rainbow observed.

PHYSICAL CHARACTERISTICS OF THE LAKE DURING TREATMENT:

Weather – Mostly sunny, 5 mph south-westerly wind, air temp = 50-70's °F.

Pre-treatment water quality parameters – taken at Upper Hampton Lake, 13 October 2004.

Depth (m)	Water Temp (°C)	Dissolved Oxygen (mg/l)	pH	Conductivity (mu/l)	Turbidity
2.0	15.90	8.77	7.85	340	6.7
3.7	15.12	8.37	7.81	340	6.5
6.8	14.90	7.33	7.70	342	5.9
9.3	15.02	7.60	7.66	343	5.9
9.4	14.50	4.91	7.54	347	6.5
~ thermocline ~ 3°C ~ ~ 3.4 mg/l ~ ~ ~ ~ ~					
11.7	11.56	1.46	6.78	424	3.3
14.0	9.25	1.70	6.74	428	3.1
14.0	9.60	1.73	6.60	527	2.1
15.6	8.10	2.07	6.63	455	6.1
18.1	7.80	1.90	6.45	491	6.2
18.8	7.75	3.20	6.58	492	8.6

PRE- AND POST- TREATMENT MONITORING:

Impact to non-targeted organisms – Zooplankton were sampled for diversity and abundance just previous to treatment, six months post treatment, and will again be sampled 12 months post treatment. Samples are currently being processed at Eastern Washington University.

Liquid rotenone formulation longevity – Water samples were taken at the outlet of Marie Lake (Marie is the most downstream water in the treated drainage) 24 hrs and four weeks post treatment. VOC (EPA methods 8310 and 502.2) testing revealed naphthalene (3.0 µg/l), 2-methylnaphthalene (2.2 µg/l), and 1-methylnaphthalene (2.6 µg/l) in lake water sampled 24 hours after treatment. The amounts of 70 other compounds possibly present in liquid rotenone formulations, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits in these same samples. The amounts of all the aforementioned compounds were below detection limits four weeks after treatment.

Period of Toxicity - less than four weeks; bio-assay. All rainbow trout in a live-box placed in the lake four weeks after treatment survived for over 48 hours.

DESCRIPTION OF TREATMENT AND OTHER COMMENTS:

The October 2004 treatment of the 16 interconnected waters of the Hampton Lakes drainage was mostly accomplished over a four-day period, although ten days would pass before the entire treatment was finished. Both slurried powdered rotenone and liquid rotenone were used, the amount of each depending on lake volume, depth, and the physical characteristics of the littoral areas. All rotenone was hauled by pick-up truck each day of the treatment. Pumper boats were used to slurry and distribute the powder over deeper areas of the lakes. Liquid was sprayed via airboat and canoe in the areas too shallow to effectively access by boat and outboard motor. Connecting creeks and wetlands were sprayed by ATV. Generally, treatment began downstream and upstream waters were last to be treated. Many waters had beaver dams or man-made water control devices that allowed lake levels to be dropped before treatment, reducing the amount of water to be treated. Columbia National Wildlife Refuge (CNWR) personnel were very helpful in creating access to all waters through brush and cattails/tules, draining lakes with control structures, removing larger beaver dams, and extracting mired vehicles.

A fall treatment for the 2004 treatment of the Hampton Lakes drainage was chosen because the many seeps and flows in the system would be add their lowest ebb, leaving many of the more marshy and inaccessible areas dry. In addition, a spring rehab would have risked early spawning of the yellow perch in the system. All target species should have been finished spawning by mid October with the possible exception of the sunfish. However, centrarchid eggs hatch in a few days and would have then been susceptible to rotenone poisoning.

Pretreatment, the CNWR accomplished the following:

- 1) Pulled all boards in water control structures at Marie Lake outlet and drained lake. Also cleaned out muck in front of Marie structure.
- 2) Pulled all boards in water control structures at Hen Lake outlet and drained lake. Kept 9" pipe outlet of Lower Hampton clear.
- 3) Cleared two beaver dams between Marie and Dabbler.
- 4) Cleared small beaver dam on Upper Hampton west outlet beforehand

- 5) Mow track to north shore of Sago and Hourglass Lakes and around south end of Shoveler to south shore of Widgeon Lake
- 6) Repaired road across Cattail Lk outlet with large rock.
- 7) Cleared upper most beaver dam at Sago Lk outlet (north side of lake).
- 8) Cleared beaver dams at inlet and outlet of Poacher Lk .

Treatment began with Pillar Lake because the outflow was dry, isolating this water from the system. Pillar contained carp, and the powdered rotenone was used initially at a concentration of 4 ppm. Three days later, the shallow areas of the lake were again treated with liquid rotenone to ensure that no carp had found refuge. No further fish kill ensued, and the rest of the lake was not treated a second time.

Just before treatment began on the lower portion of the system, all dam boards were installed at the Marie and Hen Lake's outlet structures. This created a holding basin for treated water and delayed outflow from the system until natural detoxification occurred.

On the second and third days, both Upper and Lower Hampton lakes were treated simultaneously, along with the smaller downstream ponds and creeks. Pumper boats slurried most of the rotenone necessary for Upper (2 boats) and Lower Hampton (1 boat). The southwestern and southeastern bays, and the northern shoreline of Upper Hampton were sprayed by airboat, as were the southern and eastern bays of Lower Hampton. An ATV was used to treat the eastern arm of the northern bay of Lower Hampton. A canoe with electric sprayer was used to treat Hen Lake with liquid, and an ATV was used on Hampton Slough (including the springs to the east) and the creek between Hen and Dabbler lakes. Just upstream of Marie, another small beaver pond was also treated, then drained.

The Sago-Hourglass-Widgeon lakes drainage was also treated on the third day. Flow continued from this drainage to Upper Hampton, but no flow entered Widgeon from Shoveler. One pumper boat was used on Widgeon and one deployed to Sago and Hourglass. Beaver dams at the outlets of all these waters (the large dam removed from Sago had been partially rebuilt) were left intact to hold enough water to effectively maneuver the boats. The dams were removed after treatment, and the treated water inundated the wetlands of the connecting creeks. It was in this area that the most extensive removal of bullfrog tadpoles occurred. An ATV was used to spray liquid in the creek and springs comprising the inlet to Sago Lake, although the water was very low in the springs and very little flow ensued.

On the fourth day, the remaining lakes were treated. Snipe and Cattail required one pumper boat each, and a third pumper boat treated Gadwall, Lemna, and Shoveler, in part. A canoe and ATV were also used to finish spraying liquid in the shallow areas of Snipe, Cattail, and Shoveler, although this occurred a week later during mop up operations. The last lake to be treated was Poacher, which was done by canoe and electric sprayer.

Actual powder used was less than anticipated/allotted in pre-rehabilitation plans because carp had not spread from Pillar Lake to other waters. Carp require a higher concentration of rotenone to eradicate, and the possibility that undetected immigration to other waters was covered in the proposals.

Weak Links: Marie Lake is a large, but shallow water at the downstream end of the system. When drained, the lake level drops close to 6-7 ft, and the remaining water is in two shallow basins with a creek between them. Before the 2004 treatment, an unknown and world-class beaver dam had been built between these two halves, making the eastern pond quite a bit larger than experienced at last treatment. The dam was too large and difficult to remove during treatment, and doing so would also have dumped a large volume of treated water into the lower, western pond. The eastern pond has the outlet structure, and there was some risk that treated water might rise too quickly and top the boards. Thus all rotenone intended for Marie was used upstream in the Hen, Dabbler, and especially Hampton Slough portion of the drainage with the intent that the flow would carry a sufficient amount of rotenone down to Marie. In the case of the western half of Marie, which was smaller and easier to monitor, this tactic appeared to have worked. The success in the western half of Marie was unknown. Future rehabilitators should check on this dam and remove it if necessary after Marie has been drained.

As with many rehabilitations done in the Basin, underwater springs were probably the greatest impediment to achieving a complete eradication of the target species. Upper Hampton Lake is probably the most difficult water in the Hampton Lakes drainage in this regard. Due its depth and springs, it is among the last waters to ice over in the winter. It may prove advantageous to monitor Upper Hampton during a future freeze to ascertain the last open water spots on the lake, thus identifying the most powerful springs.

Cost: About 58 man-days (man-day = 8 hrs) were required to complete the rehabilitation of Dusty Lake, from pre-rehabilitation proposals to mop-up and reports (not including program planning, meetings, equipment procurement, etc common to all rehabilitations done this FY). Treatment alone required a crew of up to 10 on the busiest day and totaled 52 man-days spread over seven days. Total cost of the project (rotenone, labor, travel, expendable equipment) was approximately \$35,000, including \$20,800 for rotenone (powder @ \$1.75/lb delivered; liquid @ \$55/gal).

No live fish were observed after the first week of treatment was completed or during the week after treatment. Most waters in the Hampton Lakes drainage were stocked with fingerling rainbow trout in spring 2005. The CNWR, in compliance with national policy, does not allow the stocking of catchable sized fish, so no fishery was available for the 2005 April 1 Opener. The fisheries will again be available for the 2006 season.

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #
S41201-2

INVOICE DATE
December 2, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Jeff Korth, Project Manager)

PROJECT: Hampton Lakes Rehab
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Dec. 1 & 2	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41201-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON LAKES REHAB

Analytical Results

8260, µg/L	MTH BLK		LCS	VOL	BTEX	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting							
Date analyzed	Limits	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04	
Dichlorodifluoromethane	1.0	nd		nd				
Chloromethane	1.0	nd		nd				
Vinyl chloride	0.2	nd		nd				
Bromomethane	1.0	nd		nd				
Chloroethane	1.0	nd		nd				
Trichlorofluoromethane	1.0	nd		nd				
Acetone	10.0	nd		nd				
1,1-Dichloroethene	1.0	nd	83%	nd	90%	96%	6%	
Methylene chloride	5.0	nd		nd				
Methyl-t-butyl ether (MTBE)	1.0	nd		nd				
trans-1,2-Dichloroethene	1.0	nd		nd				
1,1-Dichloroethane	1.0	nd		nd				
2-Butanone (MEK)	10.0	nd		nd				
cis-1,2-Dichloroethene	1.0	nd		nd				
2,2-Dichloropropane	1.0	nd		nd				
Chloroform	1.0	nd		nd				
Bromochloromethane	1.0	nd		nd				
1,1,1-Trichloroethane	1.0	nd		nd				
1,2-Dichloroethane	1.0	nd		nd				
1,1-Dichloropropene	1.0	nd		nd				
Carbon tetrachloride	1.0	nd		nd				
Benzene	1.0	nd	94%	nd	101%	110%	9%	
Trichloroethene (TCE)	1.0	nd	95%	nd	104%	115%	10%	
1,2-Dichloropropane	1.0	nd		nd				
Dibromomethane	1.0	nd		nd				
Bromodichloromethane	1.0	nd		nd				
4-Methyl-2-pentanone	1.0	nd		nd				
cis-1,3-Dichloropropene	1.0	nd		nd				
Toluene	1.0	nd	95%	nd	104%	112%	7%	
trans-1,3-Dichloropropene	1.0	nd		nd				
1,1,2-Trichloroethane	1.0	nd		nd				
2-Hexanone	1.0	nd		nd				
1,3-Dichloropropane	1.0	nd		nd				
Dibromochloromethane	1.0	nd		nd				
Tetrachloroethene (PCE)	1.0	nd		nd				
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd				
Chlorobenzene	1.0	nd	97%	nd	108%	116%	7%	
1,1,1,2-Tetrachloroethane	1.0	nd		nd				
Ethylbenzene	1.0	nd		nd				
Xylenes	1.0	nd		nd				
Styrene	1.0	nd		nd				
Bromoform	1.0	nd		nd				
1,1,2,2-Tetrachloroethane	1.0	nd		nd				
Isopropylbenzene	1.0	nd		nd				
1,2,3-Trichloropropane	1.0	nd		nd				
Bromobenzene	1.0	nd		nd				
n-Propylbenzene	1.0	nd		nd				
2-Chlorotoluene	1.0	nd		nd				
4-Chlorotoluene	1.0	nd		nd				
1,3,5-Trimethylbenzene	1.0	nd		nd				
tert-Butylbenzene	1.0	nd		nd				
1,2,4-Trimethylbenzene	1.0	nd		nd				
sec-Butylbenzene	1.0	nd		nd				
1,3-Dichlorobenzene	1.0	nd		nd				
1,4-Dichlorobenzene	1.0	nd		nd				
Isopropyltoluene	1.0	nd		nd				
1,2-Dichlorobenzene	1.0	nd		nd				
n-Butylbenzene	1.0	nd		nd				
1,2-Dibromo-3-Chloropropane	1.0	nd		nd				
1,2,4-Trichlorobenzene	1.0	nd		nd				
Naphthalene	1.0	nd		nd				
Hexachloro-1,3-butadiene	1.0	nd		nd				
1,2,3-Trichlorobenzene	1.0	nd		nd				

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41201-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON LAKES REHAB.

Analytical Results

8260, µg/L	MTH BLK		LCS	VOL BTEX	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	12/01/04	12/01/04	12/01/04	12/01/04	12/01/04	
Surrogate recoveries							
Dibromofluoromethane		103%	101%	103%	102%	103%	
Toluene-d8		98%	98%	97%	97%	97%	
4-Bromofluorobenzene		100%	99%	101%	100%	100%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41201-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON LAKES REHAB

Analytical Results

8270, µg/L	MTH BLK		LCS SEMI VOL		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	12/02/04		12/02/04	12/02/04	12/02/04	
Date analyzed	Limits	12/02/04	12/02/04	12/02/04	12/02/04	12/02/04	
Pyridine	2.0	nd		nd			
Analine	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	81%	nd	100%	98%	2%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachlorethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		nd			
4-Chloroanaline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	104%	nd	130%	140%	7%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		nd			
1-Methylnaphthalene	2.0	nd		nd			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroanaline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	91%	nd	110%	119%	8%
3-Nitroanaline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41201-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON LAKES REHAB

Analytical Results

8270, µg/L	MTH BLK		LCS SEMI VOL		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	12/02/04		12/02/04	12/02/04	12/02/04	
Date analyzed	Limits	12/02/04	12/02/04	12/02/04	12/02/04	12/02/04	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroaniline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	77%	nd	83%	88%	6%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	98%	nd	118%	127%	7%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	103%	nd	103%	116%	12%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	108%	nd	119%	123%	3%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		40%	70%	30%	29%	4%	
2-Fluorobiphenyl		124%	88%	108%	112%	110%	
4-Terphenyl-d14		136%	100%	128%	133%	129%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %

Phenol - d5: 10-85 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #

S41026-2

INVOICE DATE

October 27, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Jeff Korth, Project Manager)

PROJECT: Hampton's Rehab
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Oct. 26 & 27	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS**PLEASE SEND REMITTANCE TO THE ADDRESS BELOW**

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON'S REHAB

Analytical Results

8260, µg/L	MTH BLK		LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		nd			
1,1-Dichloroethene	1.0	nd	89%	nd	83%	89%	7%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	100%	nd	88%	94%	7%
Trichloroethene (TCE)	1.0	nd	101%	nd	88%	93%	6%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	99%	nd	89%	96%	8%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	103%	nd	90%	97%	7%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		3.0			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON'S REHAB

Analytical Results

8260, µg/L	MTH BLK		LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	
Surrogate recoveries							
Dibromofluoromethane		99%	99%	100%	102%	101%	
Toluene-d8		97%	97%	96%	100%	100%	
4-Bromofluorobenzene		102%	100%	100%	99%	99%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON'S REHAB

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/26/04		10/26/04	10/26/04	10/26/04	
Date analyzed	Limits	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
Pyridine	2.0	nd		nd			
Aniline	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	85%	nd	93%	102%	9%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachloroethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		nd			
4-Chloroaniline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	98%	nd	130%	132%	2%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		2.2			
1-Methylnaphthalene	2.0	nd		2.6			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroaniline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	89%	nd	118%	121%	3%
3-Nitroaniline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-2
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: HAMPTON'S REHAB

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/26/04		10/26/04	10/26/04	10/26/04	
Date analyzed	Limits	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroaniline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	78%	nd	93%	95%	2%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	89%	nd	124%	132%	6%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	83%	nd	110%	114%	4%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	89%	nd	115%	120%	4%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		31%	72%	29%	27%	15%	
2-Fluorobiphenyl		125%	80%	109%	118%	118%	
4-Terphenyl-d14		134%	87%	117%	127%	131%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %

Phenol - d5: 10-85 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%

POST-REHABILITATION REPORT

North Potholes Reserve

WATER: North Pothole Reserve

LOCATION: Grant Co.; Sections 33 and 34, T19N, R27E and Sections 3,4,9, and 10, T18N, R27E; consisting of the northern portions of Potholes Reservoir upstream of the Job Corps dike.

DATE(S) TREATED: October 1-2, 2004

PURPOSE: Reduce numbers of undesirable species of fish and bullfrogs to the extent possible.

LISENCED APPLICATOR: Jeffrey W Korth

LAKE DESCRIPTION @ time of treatment; water level approximately 5 ft below high water marks:

Surface acres: 113

Depth: average 3 ft; maximum 6 ft

Volume: 339 acre-feet

Weight of Water: 921,450,816 lbs

Connectivity: subterranean flows; no surface inlets or outlets. Job Corps dike separates waters in the NPR from the main body of Potholes Reservoir.

TREATMENT DESCRIPTION:

Toxicant/methods used: Rotenone; 420 gal. liquid formulation, 5% equivalent -

Total Concentration Applied: 3.7 ppm

All liquid sprayed by helicopter and ATV

Detoxification Procedures: None.

- see 'Description of Treatment and Other Comments' for details.

PHYSICAL CHARACTERISTICS OF THE LAKE DURING TREATMENT:

Weather - Sunny, 5-10 mph westerly wind, air temp = 60's °F.

Pre-treatment water quality parameters -

Depth (m)	Water Temp (°C)	Dissolved Oxygen (mg/l)	pH
Surface	26	6.5	9.1
2 ft	25	6.5	9.0
4 ft	25	6.0	9.1

note: Hydrolab instrument may have been in error, providing too low a value for DO.

SPECIES ERADICATED IN ORDER OF RELATIVE ABUNDANCE:

- 1) Carp (10's of thousands, yearling to large, old adults; by far the largest biomass);
- 2) Bluegill (10's of thousands, primarily 1-3 inches, but some larger, mature fish);
- 3) Bullfrogs (thousands, almost all tadpoles, few adults);
- 4) Largemouth Bass (thousands, mostly juveniles, but some larger adults)
- 5) Crappie (hundreds, primarily 3-6");

6) Bullheads (hundreds, primarily 6-7").

PRE- AND POST- TREATMENT MONITORING:

Impact to non-targeted organisms – Zooplankton were sampled for diversity and abundance just previous to treatment, seven months post treatment, and will again be sampled 12 months post treatment. Samples are currently being processed at Eastern Washington University.

Liquid rotenone formulation longevity – Water samples were taken 24 hrs and four weeks post treatment. VOC (EPA methods 8310 and 502.2) testing revealed acetone (24.0 µg/l), naphthalene (82.0 and 20.0 µg/l), 2-methylnaphthalene (45.0 µg/l), 1-methylnaphthalene (33.0 µg/l), acenaphthene (0.5 µg/l), and fluorene (0.5 µg/l) in lake water sampled 24 hours after treatment. The amounts of 70 other compounds possibly present in liquid rotenone formulations, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits in these same samples. The amounts of all the aforementioned compounds were below detection limits four weeks after treatment.

Period of Toxicity - less than four weeks; bio-assay. All rainbow trout in a live-box placed in the lake four weeks after treatment survived for 48 hours.

DESCRIPTION OF TREATMENT AND OTHER COMMENTS:

The fall 2004 treatment of the North Potholes Reserve was accomplished entirely with liquid rotenone. This drainage consists of the upper reaches of Potholes Reservoir, which was at its lowest annual elevation in the fall. Much of the area inundated earlier in the year was dry, and all remaining water was very shallow. A helicopter was used to spray 360 gallons over all open water on the first day of treatment. On the second day, two ATV's were used to spot check and re-spray 60 gals on any areas where live fish or tadpoles were present. By the third day, no live fish were observed. However, during the following spring 2005, several adult carp were observed in the lower portion of the drainage near the Job Corps Dike.

Cost: About 24 man-days (man-day = 8 hrs) were required to complete the rehabilitation of North Potholes Reserve, from pre-rehabilitation proposals to mop-up and reports (not including program planning, meetings, equipment procurement, etc common to all rehabilitations done this FY).

Treatment alone required a crew of six and totaled 17 man-days spread over three days. Total cost of the project (rotenone, helicopter, labor, travel, expendable equipment) was approximately \$33,000, including \$23,100 for rotenone (liquid @ \$55/gal) and \$2,500 for the helicopter application.

Stocking the area north of the cross dike within the North Potholes Reserve with largemouth bass and bluegill was started in spring 2005. The southern area was left fishless except for the surviving carp to evaluate its usefulness as leopard frog over-wintering habitat. Largemouth bass and bluegill were captured from other area lakes (Ephrata Lake, Grant Co.- bass; Whitestone Lake, Okanogan Co. - bluegill), and especially trout lakes scheduled for rehabilitation in the future (Blue and Park lakes, Grant Co; Leader Lake, Okanogan Co.). Initial emphasis was on stocking bluegill to establish a forage base, and primarily on broodstock. Target allotments were 1,500 bluegill (mostly broodstock) and 500 largemouth bass (adult/juvenile mix). The fishery is expected to be recovered by 2010.

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #
S41005-1

INVOICE DATE
October 6, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Jeff Korth, Project Manager)

PROJECT: Potholes Rehabilitation
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Oct. 5 & 6	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41005-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: POTHOLES REHABILITATION

Analytical Results

8260, µg/L	MTH BLK		LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/05/04	10/05/04	10/05/04	10/05/04	10/05/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		24			
1,1-Dichloroethene	1.0	nd	85%	nd	84%	78%	7%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	101%	nd	103%	97%	6%
Trichloroethene (TCE)	1.0	nd	102%	nd	104%	97%	7%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	102%	nd	104%	98%	6%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	104%	nd	107%	100%	7%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41005-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: POTHoles REHABILITATION

Analytical Results

8260, µg/L		MTH BLK	LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/05/04	10/05/04	10/05/04	10/05/04	10/05/04	
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		82			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			
*-instrument detection limits							
Surrogate recoveries							
Dibromofluoromethane		98%	99%	90%	101%	101%	
Toluene-d8		98%	97%	96%	98%	98%	
4-Bromofluorobenzene		99%	100%	99%	99%	100%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

#REF!

ESN SEATTLE CHEMISTRY LABORATORY

ESN Job Number: S41005-1
 Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
 Client Job Name: POTHoles REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/06/04		10/06/04	10/06/04	10/06/04	
Date analyzed	Limits	10/06/04	10/06/04	10/06/04	10/06/04	10/06/04	
Pyridine	0.0	nd		nd			
Aniline	0.0	nd		nd			
Phenol	0.0	nd		nd			
2-Chlorophenol	0.0	nd		nd			
Bis (2-chloroethyl) ether	0.0	nd		nd			
1,3-Dichlorobenzene	0.0	nd		nd			
1,4-Dichlorobenzene	0.0	nd	90%	nd	102%	105%	3%
1,2-Dichlorobenzene	0.0	nd		nd			
Benzyl alcohol	0.0	nd		nd			
2-Methylphenol (o-cresol)	0.0	nd		nd			
Bis (2-chloroisopropyl) ether	0.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	0.0	nd		nd			
Hexachloroethane	0.0	nd		nd			
N-Nitroso-di-n-propylamine	0.0	nd		nd			
Nitrobenzene	0.0	nd		nd			
Isophorone	0.0	nd		nd			
2-Nitrophenol	0.0	nd		nd			
4-Nitrophenol	0.0	nd		nd			
2,4-Dimethylphenol	0.0	nd		nd			
Bis (2-chloroethoxy) methane	0.0	nd		nd			
2,4-Dichlorophenol	0.0	nd		nd			
1,2,4-Trichlorobenzene	0.0	nd		nd			
Naphthalene	0.0	nd		20			
4-Chloroaniline	0.0	nd		nd			
Hexachlorobutadiene	0.0	nd	108%	nd	135%	132%	2%
4-Chloro-3-methylphenol	0.0	nd		nd			
2-Methylnaphthalene	0.0	nd		45			
1-Methylnaphthalene	0.0	nd		33			
Hexachlorocyclopentadiene	0.0	nd		nd			
2,4,6-Trichlorophenol	0.0	nd		nd			
2,4,5-Trichlorophenol	0.0	nd		nd			
2-Chloronaphthalene	0.0	nd		nd			
2-Nitroaniline	0.0	nd		nd			
1,4-Dinitrobenzene	0.0	nd		nd			
Dimethylphthalate	0.0	nd		nd			
Acenaphthylene	0.0	nd		nd			
1,3-Dinitrobenzene	0.0	nd		nd			
2,6-Dinitrotoluene	0.0	nd		nd			
1,2-Dinitrobenzene	0.0	nd		nd			
Acenaphthene	0.0	nd	99%	0.50	125%	126%	1%
3-Nitroaniline	0.0	nd		nd			
Dibenzofuran	0.0	nd		nd			
2,4-Dinitrotoluene	0.0	nd		nd			
2,3,4,6-Tetrachlorophenol	0.0	nd		nd			
2,3,5,6-Tetrachlorophenol	0.0	nd		nd			
2,4-Dinitrophenol	0.0	nd		nd			
Fluorene	0.0	nd		0.48			

#REF1

ESN SEATTLE CHEMISTRY LABORATORY

ESN Job Number: S41005-1
 Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
 Client Job Name: POTHOLES REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/06/04		10/06/04	10/06/04	10/06/04	
Date analyzed	Limits	10/06/04	10/06/04	10/06/04	10/06/04	10/06/04	
4-Chlorophenylphenylether	0.0	nd		nd			
Diethylphthalate	0.0	nd		nd			
4-Nitroaniline	0.0	nd		nd			
4,6-Dinitro-2-methylphenol	0.0	nd		nd			
N-nitrosodiphenylamine	0.0	nd	83%	nd	96%	94%	2%
Azobenzene	0.0	nd		nd			
4-Bromophenylphenylether	0.0	nd		nd			
Hexachlorobenzene	0.0	nd		nd			
Pentachlorophenol	0.0	nd		nd			
Phenanthrene	0.0	nd		nd			
Anthracene	0.0	nd		nd			
Carbazole	0.0	nd		nd			
Di-n-butylphthalate	0.0	nd		nd			
Fluoranthene	0.0	nd	101%	nd	135%	130%	4%
Pyrene	0.0	nd		nd			
Butylbenzylphthalate	0.0	nd		nd			
Bis(2-ethylhexyl) adipate	0.0	nd		nd			
Benzo(a)anthracene	0.0	nd		nd			
Chrysene	0.0	nd		nd			
Bis (2-ethylhexyl) phthalate	0.0	nd		nd			
Di-n-octyl phthalate	0.0	nd	91%	nd	117%	118%	1%
Benzo(b)fluoranthene	0.0	nd		nd			
Benzo(k)fluoranthene	0.0	nd		nd			
Benzo(a)pyrene	0.0	nd	96%	nd	119%	122%	2%
Dibenzo(a,h)anthracene	0.0	nd		nd			
Benzo(ghi)perylene	0.0	nd		nd			
Indeno(1,2,3-cd)pyrene	0.0	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		32%	90%	23%	31%	33%	
2-Fluorobiphenyl		143%	104%	106%	124%	123%	
4-Terphenyl-d14		144%	110%	111%	132%	132%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %

Phenol - d5: 10-85 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%

CHAIN-OF-CUSTODY RECORD

DATE: 10-3-04 PAGE 1 OF 1
PROJECT NAME: Potholes Rehabilitation
LOCATION: North Potholes Reserve
COLLECTOR: M. Asher DATE OF COLLECTION 10-3-

[illegible]

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #

S41104-1

INVOICE DATE

November 5, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Jeff Korth, Project Manager)

PROJECT: North Potholes
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Nov. 4 & 5	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41104-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: NORTH POTHOLE

Analytical Results

8260, µg/L	MTH BLK		LCS	VIAL	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	11/04/04	11/04/04	11/04/04	11/04/04	11/04/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		nd			
1,1-Dichloroethene	1.0	nd	105%	nd	100%	100%	0%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	108%	nd	105%	109%	4%
Trichloroethene (TCE)	1.0	nd	107%	nd	107%	109%	2%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	106%	nd	103%	108%	5%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	107%	nd	105%	110%	5%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		nd			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41104-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: NORTH POTHOLES

Analytical Results

8260, µg/L	MTH BLK	LCS	VIAL	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting					
Date analyzed	Limits	11/04/04	11/04/04	11/04/04	11/04/04	11/04/04

Surrogate recoveries

Dibromofluoromethane	100%	100%	100%	100%	100%
Toluene-d8	96%	97%	97%	96%	97%
4-Bromofluorobenzene	98%	100%	100%	101%	98%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41104-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: NORTH POTHOLES

Analytical Results

8270, µg/L	MTH BLK	LCS	PINT	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	11/05/04	11/05/04	11/05/04	11/05/04	
Date analyzed	Limits	11/05/04	11/05/04	11/05/04	11/05/04	
Pyridine	2.0	nd	nd			
Aniline	2.0	nd	nd			
Phenol	2.0	nd	nd			
2-Chlorophenol	2.0	nd	nd			
Bis (2-chloroethyl) ether	2.0	nd	nd			
1,3-Dichlorobenzene	2.0	nd	nd			
1,4-Dichlorobenzene	2.0	nd	114%	104%	99%	5%
1,2-Dichlorobenzene	2.0	nd	nd			
Benzyl alcohol	2.0	nd	nd			
2-Methylphenol (o-cresol)	2.0	nd	nd			
Bis (2-chloroisopropyl) ether	10.0	nd	nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd	nd			
Hexachlorethane	2.0	nd	nd			
N-Nitroso-di-n-propylamine	2.0	nd	nd			
Nitrobenzene	2.0	nd	nd			
Isophorone	2.0	nd	nd			
2-Nitrophenol	10.0	nd	nd			
4-Nitrophenol	10.0	nd	nd			
2,4-Dimethylphenol	2.0	nd	nd			
Bis (2-chloroethoxy) methane	2.0	nd	nd			
2,4-Dichlorophenol	10.0	nd	nd			
1,2,4-Trichlorobenzene	2.0	nd	nd			
Naphthalene	2.0	nd	nd			
4-Chloroaniline	10.0	nd	nd			
Hexachlorobutadiene	2.0	nd	125%	138%	140%	1%
4-Chloro-3-methylphenol	10.0	nd	nd			
2-Methylnaphthalene	2.0	nd	nd			
1-Methylnaphthalene	2.0	nd	nd			
Hexachlorocyclopentadiene	2.0	nd	nd			
2,4,6-Trichlorophenol	10.0	nd	nd			
2,4,5-Trichlorophenol	10.0	nd	nd			
2-Chloronaphthalene	2.0	nd	nd			
2-Nitroaniline	10.0	nd	nd			
1,4-Dinitrobenzene	10.0	nd	nd			
Dimethylphthalate	2.0	nd	nd			
Acenaphthylene	0.2	nd	nd			
1,3-Dinitrobenzene	10.0	nd	nd			
2,6-Dinitrotoluene	2.0	nd	nd			
1,2-Dinitrobenzene	2.0	nd	nd			
Acenaphthene	0.2	nd	112%	129%	131%	2%
3-Nitroaniline	10.0	nd	nd			
Dibenzofuran	2.0	nd	nd			
2,4-Dinitrotoluene	2.0	nd	nd			
2,3,4,6-Tetrachlorophenol	2.0	nd	nd			
2,3,5,6-Tetrachlorophenol	2.0	nd	nd			
2,4-Dinitrophenol	10.0	nd	nd			
Fluorene	0.2	nd	nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41104-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: NORTH POTHOLES

Analytical Results

8270, µg/L	MTH BLK	LCS	PINT	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	11/05/04	11/05/04	11/05/04	11/05/04	
Date analyzed	Limits	11/05/04	11/05/04	11/05/04	11/05/04	
4-Chlorophenylphenylether	2.0	nd	nd			
Diethylphthalate	2.0	nd	nd			
4-Nitroaniline	10.0	nd	nd			
4,6-Dinitro-2-methylphenol	10.0	nd	nd			
N-nitrosodiphenylamine	2.0	nd	86%	92%	92%	0%
Azobenzene	2.0	nd	nd			
4-Bromophenylphenylether	2.0	nd	nd			
Hexachlorobenzene	2.0	nd	nd			
Pentachlorophenol	10.0	nd	nd			
Phenanthrene	0.2	nd	nd			
Anthracene	0.2	nd	nd			
Carbazole	2.0	nd	nd			
Di-n-butylphthalate	2.0	nd	nd			
Fluoranthene	0.2	nd	115%	129%	129%	0%
Pyrene	0.2	nd	nd			
Butylbenzylphthalate	2.0	nd	nd			
Bis(2-ethylhexyl) adipate	2.0	nd	nd			
Benzo(a)anthracene	0.2	nd	nd			
Chrysene	0.2	nd	nd			
Bis (2-ethylhexyl) phthalate	2.0	nd	nd			
Di-n-octyl phthalate	2.0	nd	116%	134%	130%	3%
Benzo(b)fluoranthene	0.2	nd	nd			
Benzo(k)fluoranthene	0.2	nd	nd			
Benzo(a)pyrene	0.2	nd	111%	130%	128%	2%
Dibenzo(a,h)anthracene	0.2	nd	nd			
Benzo(ghi)perylene	0.2	nd	nd			
Indeno(1,2,3-cd)pyrene	0.2	nd	nd			
Surrogate recoveries						
Nitrobenzene-d5		37%	92%	36%	34%	30%
2-Fluorobiphenyl		131%	107%	114%	133%	139%
4-Terphenyl-d14		142%	112%	134%	150%	150%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %

Phenol - d5: 10-85 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N Olympia, WA 98501-1091 (360) 902-2222, TDD (360) 902-2207
Main Office Location: Natural Resources Building 1111 Washington Street SE Olympia, WA

June 1, 2005

Kathleen Emmett
Water Quality Program
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Department of Ecology
Water Quality Program
JUN 01 2005

NPDES Permit WA0041009
Annual Report

Dear Ms. Emmett:

Enclosed are Washington Department of Fish and Wildlife's Post-Treatment Discharge Monitoring Reports for Fish Lake and Silver Nail Lake (Okanogan County), Rocky Lake (Stevens County) and Ellen Lake (Ferry County), treated with rotenone in the fall of 2004, along with all other pertinent documentation as mandated by the reporting requirement under S3.A of NPDES Waste Discharge Individual Permit Number WA0041009.

Also enclosed is a copy of the amended FSEIS for the lakes proposed for treatment in the fall of 2004 and the Spring of 2005, including all SEPA comments, results and decisions, as well as the 2005-2006 Lake and Stream Rehabilitation Proposal list.

We are notifying you, under S3.E of Non-Compliance by WDFW of the full reporting requirement of S3.A. We are unable to comply with the reporting requirements for the following waters treated with rotenone during the autumn of 2004, in Grant County, by the June 1, 2005 deadline. We anticipate being able to provide the post-treatment reports for these waters by June 10, 2005:

Sago, Hourglass, Widgeon, Upper Hampton, Lower Hampton, Hen, Dabbler, Marie, Pillar, Cattail, Snipe, Poacher, Gadwall, Shoveler, and Lemna Lakes, Hampton Slough, and the North Potholes Reserve.

Finally, WDFW complied with condition S5 of the NPDES permit, and completed the SEPA review process regarding the use of Antimycin as a fish toxicant for certain fish management projects. WDFW provided you with a copy of the SEPA documentation relative to that condition, by letter on May 27, 2005.

Please feel free to contact me at 360-902-2711 or email anderjda@dfw.wa.gov with any questions.

Sincerely,



Jon. Anderson
Resident Native Fisheries Manager

Enclosures

POST TREATMENT DISCHARGE MONITORING REPORT

1. **Lake Name:** Fish Lake
2. **County:** Okanogan
3. **Section:** 16-22, **Township:** 36, **Range:** 25E
4. **Date(s) of Treatment:** Oct 9-10, 2004
5. **Purpose of Treatment:** Fish Lake is a part of the Sinlahekin Wildlife Area, which is managed for diverse types of recreation by WDFW. It was a productive and popular fishery of statewide significance that featured production fishing for 10" rainbow trout. The recent illegal introduction of smallmouth bass to the lake has severely compromised the trout fishery. The presence of the bass has not only created competition with the trout, but has made fingerling plants of rainbows not effective due to predation. The only remaining means to restore the lake to trout only production was to chemically remove the bass population and replant with rainbow.
6. **Name of Licensed Applicator:** Jeff Korth
7. **Lake Description: Surface Acres:** 100, **Volume:** 2,936 Acre Feet:
Maximum Depth: 59, **Average Depth:** 29
8. **Stream Description: Width:** N/A, **Length:** N/A
Flow Rate of Stream/Outlet (cu. ft. per sec.): N/A
Volume and Weight of Water Treated (gallons, pounds): 7,983,947,348 lbs.
9. **Name of Fish Toxicant Product Used:** Rotenone Fish Toxicant Powder, Prenfish Fish Toxicant Liquid
10. **Description of Treatment Method(s):** Powder and liquid both applied by pumper boats, which mixes chemical with water prior to broadcasting into lake
11. **Quantity of Fish Toxicant used (pounds and/or gallons):** 7,645 lbs of powder and 30 gals of liquid
12. **Concentration of rotenone in formulated Rotenone product:** 7.4% in powder and 5.0% in liquid
13. **Concentration of active rotenone in water (ppm):** 1.0 ppm

14. **Water conditions/quality:** Water sampling done within 24hrs pre-treatment:

Depth (m)	Temperature ©	pH
0	14.5	8.6
1	14.4	8.5
5	14.0	8.2
10	12.0	8.1
12	10.1	7.9
15	9.0	7.8

15. **Detoxification of rotenone treated water (if required):** Description of detoxification methods/equipment; potassium permanganate application rate (pounds per hour); flow rate of stream/outlet (cu. ft. per sec.); estimate of average concentration (ppm): N/A
16. **Description of lake inlets(s)/outlet(s) and any temporary water control measures (if required):** N/A, lake has no inlet or outlet
17. **Period of Toxicity (duration of water quality reduction):** 4-6weeks
18. **Eradicated fish species:** smallmouth bass, rainbow trout
19. **Results of pre and post treatment monitoring:** Prior to the treatment, the lake was sampled for various parameters including temperature, pH, and zooplankton. Post sampling included VOV and Semi-VOC both within 24 hours of treatment and 4 weeks post-treatment.
20. **Impact on non-target organisms:** None observed
21. **Brief description of treatment/detoxification and other comments:** The treatment began at 0900 on October 9th and was completed by the next day when the airboat was used to treat the shallow areas. Both days it was cool and overcast with the wind picking up in the afternoon to aid in mixing the chemical. There was no water either entering or exiting the lake during or after the treatment. Some fish began showing up along the banks by noon of the first day and continued throughout the treatment period. By the next day, thousands of smallmouth bass were washed up along the shoreline, in addition to a few larger rainbow trout. There were very few yearling trout from the previous year's plant indicating the necessity of the chemical treatment to remove the bass. A bioassay with 5 rainbow trout was conducted at 6 weeks and all fish survived, indicating that the lake had detoxified. During April/May of 2005, there were 11,000 (8"-10") and 38,000 (3") rainbow trout planted into the lake.
22. **Copy of the amended FSEIS for lakes/streams treated during the reporting period including all SEPA comments, results and decisions**
23. **List of lakes/streams proposed for treatment during the upcoming year.**

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #
S41014-1

INVOICE DATE
October 15, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Bob Jateff, Project Manager)

PROJECT: Lake Rehabilitation
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Oct. 14 & 15	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41014-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: LAKE REHABILITATION

Analytical Results

8260, µg/L	MTH BLK		LCS	VIAL	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/15/04	10/15/04	10/15/04	10/15/04	10/15/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
1,1-Dichloroethene	1.0	nd	92%	nd	102%	94%	8%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	104%	nd	115%	110%	4%
Trichloroethene (TCE)	1.0	nd	105%	nd	116%	110%	5%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	107%	1.2	112%	107%	5%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	105%	nd	115%	110%	4%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		nd			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41014-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: LAKE REHABILITATION

Analytical Results

8260, µg/L	MTH BLK	LCS	VIAL	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting					
Date analyzed	Limits	10/15/04	10/15/04	10/15/04	10/15/04	10/15/04
Surrogate recoveries						
Dibromofluoromethane		99%	97%	100%	98%	99%
Toluene-d8		96%	98%	100%	97%	98%
4-Bromofluorobenzene		97%	98%	100%	99%	100%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41014-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: LAKE REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS	PINT	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/14/04		10/14/04	10/14/04	10/14/04	
Date analyzed	Limits	10/14/04	10/14/04	10/14/04	10/14/04	10/14/04	
Pyridine	2.0	nd		nd			
Aniline	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	83%	nd	76%	101%	28%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachlorethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		nd			
4-Chloroaniline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	101%	nd	131%	133%	2%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		nd			
1-Methylnaphthalene	2.0	nd		nd			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroaniline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	95%	nd	119%	117%	2%
3-Nitroaniline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41014-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: LAKE REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS	PINT	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/14/04		10/14/04	10/14/04	10/14/04	
Date analyzed	Limits	10/14/04	10/14/04	10/14/04	10/14/04	10/14/04	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroaniline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	84%	nd	91%	96%	5%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	93%	nd	126%	120%	5%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	87%	nd	111%	104%	7%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	96%	nd	118%	124%	5%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		23%	80%	25%	12%	29%	
2-Fluorobiphenyl		121%	92%	93%	123%	131%	
4-Terphenyl-d14		128%	102%	104%	128%	133%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %
Phenol - d5: 10-85 %
2,4,6- tribromophenol: 29-159%
Nitrobenzene - d5: 20-120 %
2-Fluorobiphenyl: 50-150%
p-Terphenyl-d14: 50-150% ,
Acceptable RPD limit: 35%

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #
S41124-3

INVOICE DATE
November 29, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Bob Jateff, Project Manager)

PROJECT: Fish Lake
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
11/29	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41124-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: FISH LAKE

Analytical Results

8260, µg/L	MTH BLK		LCS SAMPLE 1		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	11/29/04	11/29/04	11/29/04	11/29/04	11/29/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		nd			
1,1-Dichloroethene	1.0	nd	82%	nd	81%	93%	14%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	92%	nd	94%	109%	15%
Trichloroethene (TCE)	1.0	nd	95%	nd	97%	111%	13%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	93%	nd	94%	108%	14%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	97%	nd	98%	114%	15%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		3.2			
Xylenes	1.0	nd		1.1			
Styrene	1.0	nd		4.2			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		3.0			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41124-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: FISH LAKE

Analytical Results

8260, µg/L	MTH BLK		LCS SAMPLE 1		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	11/29/04	11/29/04	11/29/04	11/29/04	11/29/04	

Surrogate recoveries

Dibromofluoromethane	103%	103%	102%	102%	103%
Toluene-d8	98%	97%	98%	95%	95%
4-Bromofluorobenzene	100%	100%	101%	103%	100%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41124-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: FISH LAKE

Analytical Results

8270, µg/L	MTH BLK		LCS SAMPLE 3		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	11/29/04		11/29/04	11/29/04	11/29/04	
Date analyzed	Limits	11/29/04	11/29/04	11/29/04	11/29/04	11/29/04	
Pyridine	2.0	nd		nd			
Aniline	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	86%	nd	95%	91%	4%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachlorethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		nd			
4-Chloroaniline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	111%	nd	134%	137%	2%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		nd			
1-Methylnaphthalene	2.0	nd		nd			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroaniline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	93%	nd	125%	119%	5%
3-Nitroaniline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41124-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: FISH LAKE

Analytical Results

8270, µg/L	MTH BLK		LCS SAMPLE 3		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	11/29/04		11/29/04	11/29/04	11/29/04	
Date analyzed	Limits	11/29/04	11/29/04	11/29/04	11/29/04	11/29/04	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroanaline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	83%	nd	91%	86%	6%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	101%	nd	124%	123%	1%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	97%	nd	97%	104%	7%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	119%	nd	121%	122%	1%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		29%	79%	25%	26%	25%	
2-Fluorobiphenyl		129%	94%	103%	126%	119%	
4-Terphenyl-d14		148%	98%	116%	145%	124%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %
Phenol - d5: 10-85 %
2,4,6- tribromophenol: 29-159%
Nitrobenzene - d5: 20-120 %
2-Fluorobiphenyl: 50-150%
p-Terphenyl-d14: 50-150%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41119-1
Client: ESN-PACIFIC
Client Job Name: HICKMAN - AFB
Client Job Number: D411180361

Analytical Results

8260, mg/kg	MTH BLK		LCS	S1-SURFACE	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	
Date extracted	Reporting	11/19/04		11/19/04	11/19/04	11/19/04	
Date analyzed	Limits	11/19/04	11/19/04	11/19/04	11/19/04	11/19/04	
Moisture, %				1%	1%	1%	
Dichlorodifluoromethane	0.05	nd		nd			
Chloromethane	0.05	nd		nd			
Vinyl chloride	0.01	nd		nd			
Bromomethane	0.05	nd		nd			
Chloroethane	0.05	nd		nd			
Trichlorofluoromethane	0.05	nd		nd			
Acetone	0.50	nd		nd			
1,1-Dichloroethene	0.05	nd	88%	nd	93%	87%	
Methylene chloride	0.02	nd		nd			
Methyl-t-butyl ether (MTBE)	0.05	nd		nd			
trans-1,2-Dichloroethene	0.05	nd		nd			
1,1-Dichloroethane	0.05	nd		nd			
2-Butanone (MEK)	0.50	nd		nd			
cis-1,2-Dichloroethene	0.05	nd		nd			
2,2-Dichloropropane	0.05	nd		nd			
Chloroform	0.05	nd		nd			
Bromochloromethane	0.05	nd		nd			
1,1,1-Trichloroethane	0.05	nd		nd			
1,2-Dichloroethane	0.05	nd		nd			
1,1-Dichloropropene	0.05	nd		nd			
Carbon tetrachloride	0.05	nd		nd			
Benzene	0.02	nd	96%	nd	105%	104%	
Trichloroethene (TCE)	0.02	nd	95%	nd	106%	106%	
1,2-Dichloropropane	0.05	nd		nd			
Dibromomethane	0.05	nd		nd			
Bromodichloromethane	0.05	nd		nd			
4-Methyl-2-pentanone	0.05	nd		nd			
cis-1,3-Dichloropropene	0.05	nd		nd			
Toluene	0.05	nd	96%	nd	105%	104%	
trans-1,3-Dichloropropene	0.05	nd		nd			
1,1,2-Trichloroethane	0.05	nd		nd			
2-Hexanone	0.05	nd		nd			
1,3-Dichloropropane	0.05	nd		nd			
Dibromochloromethane	0.05	nd		nd			
Tetrachloroethene (PCE)	0.02	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.005	nd		nd			
Chlorobenzene	0.05	nd	98%	nd	108%	106%	
1,1,1,2-Tetrachloroethane	0.05	nd		nd			
Ethylbenzene	0.05	nd		nd			
Xylenes	0.05	nd		nd			
Styrene	0.05	nd		nd			
Bromoform	0.05	nd		nd			
1,1,2,2-Tetrachloroethane	0.05	nd		nd			
Isopropylbenzene	0.05	nd		nd			
1,2,3-Trichloropropane	0.05	nd		nd			
Bromobenzene	0.05	nd		nd			
n-Propylbenzene	0.05	nd		nd			
2-Chlorotoluene	0.05	nd		nd			
4-Chlorotoluene	0.05	nd		nd			
1,3,5-Trimethylbenzene	0.05	nd		nd			
tert-Butylbenzene	0.05	nd		nd			
1,2,4-Trimethylbenzene	0.05	nd		nd			
sec-Butylbenzene	0.05	nd		nd			
1,3-Dichlorobenzene	0.05	nd		nd			
1,4-Dichlorobenzene	0.05	nd		nd			
Isopropyltoluene	0.05	nd		nd			
1,2-Dichlorobenzene	0.05	nd		nd			
n-Butylbenzene	0.05	nd		nd			
1,2-Dibromo-3-Chloropropane	0.05	nd		nd			
1,2,4-Trichlorobenzene	0.05	nd		nd			
Naphthalene	0.05	nd		nd			
Hexachloro-1,3-butadiene	0.05	nd		nd			
1,2,3-Trichlorobenzene	0.05	nd		nd			

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41119-1
Client: ESN-PACIFIC
Client Job Name: HICKMAN - AFB
Client Job Number: D411180361

Analytical Results

8260, mg/kg		MTH BLK	LCS	S1-SURFACE	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	
Date extracted	Reporting	11/19/04		11/19/04	11/19/04	11/19/04	
Date analyzed	Limits	11/19/04	11/19/04	11/19/04	11/19/04	11/19/04	
Moisture, %				1%	1%	1%	

Surrogate recoveries

Dibromofluoromethane	102%	103%	100%	101%	101%
Toluene-d8	97%	100%	98%	98%	96%
4-Bromofluorobenzene	98%	100%	102%	102%	103%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
J - estimated quantitation, below listed reporting limits
Acceptable Recovery limits: 65% TO 135%

POST TREATMENT DISCHARGE MONITORING REPORT

1. **Lake Name:** Silver Nail Lake
2. **County:** Okanogan
3. **Section:** 6, **Township:** 40N, **Range:** 27E
4. **Date(s) of Treatment:** Oct 21, 2004
5. **Purpose of Treatment:** Silver Nail used to be managed similar to other lakes, but since 2002, has been designated as a juvenile-only trout water, which is limited to anglers under the age of 15. The infusion of largemouth bass and crappie has prevented adequate growth, through competition for the trout as well as preying on fingerlings planted at a small size. A lake rehabilitation needed to be done to restore the waters back to a trout only fishery.
6. **Name of Licensed Applicator:** Jeff Korth
7. **Lake Description: Surface Acres:** 6, **Volume:** 42 Acre Feet:
Maximum Depth: 17, **Average Depth:** 7
8. **Stream Description: Width:** N/A, **Length:** N/A
Flow Rate of Stream/Outlet (cu. ft. per sec.): N/A
Volume and Weight of Water Treated (gallons, pounds): 112,890,625 lbs.
9. **Name of Fish Toxicant Product Used:** Prenfish Fish Toxicant Liquid
10. **Description of Treatment Method(s):** Liquid was distributed across the lake by the use of a chemical sprayer from a small canoe.
11. **Quantity of Fish Toxicant used (pounds and/or gallons):** 8 gals of liquid
12. **Concentration of rotenone in formulated Rotenone product:** 5.0% in liquid
13. **Concentration of active rotenone in water (ppm):** 1.0 ppm

Department of Ecology
Water Quality Program

JUN 01 2005

14. **Water conditions/quality:** Water sampling done within 24hrs pre-treatment:

Depth (m)	Temperature ©	pH
0	12.7	8.5
1	12.3	8.5
2	12.3	8.2
3	12.3	8.2

15. **Detoxification of rotenone treated water (if required): Description of detoxification methods/equipment; potassium permanganate application rate (pounds per hour); flow rate of stream/outlet (cu. ft. per sec.); estimate of average concentration (ppm):** N/A
16. **Description of lake inlets(s)/outlet(s) and any temporary water control measures (if required):** N/A, lake has no inlet or outlet
17. **Period of Toxicity (duration of water quality reduction):** 4-6weeks
18. **Eradicated fish species:** largemouth bass, black crappie
19. **Results of pre and post treatment monitoring:** Prior to the treatment, the lake was sampled for various parameters including temperature, pH, and zooplankton. Post sampling included VOV and Semi-VOC both within 24 hours of treatment and 4 weeks post-treatment.
20. **Impact on non-target organisms:** None observed
21. **Brief description of treatment/detoxification and other comments:** The treatment began at 1000 on October 21st and was completed by 1400 the same day. Liquid rotenone was sprayed from a canoe to completely cover the entire lake. Bass and crappie started dying almost immediately and continued for the rest of the day. There were many bass in the 8" range with a few as large as 6 lbs, in addition to numerous black crappie and even a 1 lb brown bullhead that appeared to be in distress. A bioassay with 5 rainbow trout was conducted at 4 weeks and all fish survived. This spring, there were 200 (8-10") and 1,000 (3") rainbow trout planted to help restore the lake back to trout only management.
22. **Copy of the amended FSEIS for lakes/streams treated during the reporting period including all SEPA comments, results and decisions**
23. **List of lakes/streams proposed for treatment during the upcoming year.**

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #

S41026-1

INVOICE DATE

October 27, 2004

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Bob Jateff, Project Manager)

PROJECT: Silver Nail Lake Rehabilitation
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
Oct. 26 & 27	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVER NAIL LAKE REHABILITATION

Analytical Results

8260, µg/L	MTH BLK		LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		21			
1,1-Dichloroethene	1.0	nd	89%	nd	83%	89%	7%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	100%	nd	88%	94%	7%
Trichloroethene (TCE)	1.0	nd	101%	nd	88%	93%	6%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	99%	nd	89%	96%	8%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	103%	nd	90%	97%	7%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		13			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-Instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVER NAIL LAKE REHABILITATION

Analytical Results

8260, µg/L	MTH BLK		LCS	SURFACE	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	10/27/04	10/27/04	10/27/04	10/27/04	10/27/04	
Surrogate recoveries							
Dibromofluoromethane		99%	99%	101%	102%	101%	
Toluene-d8		97%	97%	97%	100%	100%	
4-Bromofluorobenzene		102%	100%	99%	99%	99%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVER NAIL LAKE REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
Date analyzed	Limits	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
Pyridine	2.0	nd		nd			
Aniline	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	85%	nd	93%	102%	9%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachloroethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		3.7			
4-Chloroaniline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	98%	nd	130%	132%	2%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		10			
1-Methylnaphthalene	2.0	nd		7.0			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroaniline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	89%	nd	118%	121%	3%
3-Nitroaniline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41026-1
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVER NAIL LAKE REHABILITATION

Analytical Results

8270, µg/L	MTH BLK		LCS SURFACE		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
Date analyzed	Limits	10/26/04	10/26/04	10/26/04	10/26/04	10/26/04	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroaniline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	78%	nd	93%	95%	2%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	89%	nd	124%	132%	6%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	83%	nd	110%	114%	4%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	89%	nd	115%	120%	4%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
Nitrobenzene-d5		31%	72%	26%	27%	15%	
2-Fluorobiphenyl		125%	80%	95%	118%	118%	
4-Terphenyl-d14		134%	87%	100%	127%	131%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %

Phenol - d5: 10-85 %

2,4,6- tribromophenol: 29-159%

Nitrobenzene - d5: 20-120 %

2-Fluorobiphenyl: 50-150%

p-Terphenyl-d14: 50-150%

Acceptable RPD limit: 35%

ESN NORTHWEST

INVOICE

ESN Northwest Tax ID #91-1510006
Phone: (360) 459-4670; Fax: (360) 459-3432

INVOICE #
S41223-3

INVOICE DATE
January 6, 2005

CLIENT JOB #

BILL TO: WA Dept. of Fish & Wildlife
600 Capitol Way North
Olympia, WA 98501

ATTN: Jim Uehara
(Bob Jateff, Project Manager)

PROJECT: Silvernail Lake
Washington

DATE	QUANTITY	DESCRIPTION	UNIT COST	TOTAL
12/28 - 1/6	1	8260 - water	\$110.00	\$110.00
	1	8270 - water	\$270.00	\$270.00
Total Amount Due				\$380.00

TERMS: NET 30 DAYS

PLEASE SEND REMITTANCE TO THE ADDRESS BELOW

ESN Northwest
800 Sleater-Kinney SE, PMB #262
Lacey, WA 98503-1127

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S41223-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVERNAIL LAKE

Analytical Results

8260, µg/L	MTH BLK		LCS	SAMPLE 1	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	12/28/04	12/28/04	12/28/04	12/28/04	12/28/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	0.2	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		nd			
1,1-Dichloroethene	1.0	nd	114%	nd	112%	116%	4%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	109%	nd	109%	113%	4%
Trichloroethene (TCE)	1.0	nd	110%	nd	111%	115%	4%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	110%	nd	106%	108%	2%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene (PCE)	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	112%	nd	109%	113%	4%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		3.3			
Xylenes	1.0	nd		1.4			
Styrene	1.0	nd		4.0			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		nd			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-instrument detection limits

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ESN Job Number: S41223-3
Client: WASHINGTON DEPT. OF FISH AND WILDLIFE
Client Job Name: SILVERNAIL LAKE

Analytical Results

8260, µg/L	MTH BLK		LCS	SAMPLE 1	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting						
Date analyzed	Limits	12/28/04	12/28/04	12/28/04	12/28/04	12/28/04	

Surrogate recoveries

Dibromofluoromethane	108%	107%	108%	110%	109%
Toluene-d8	97%	98%	97%	97%	95%
4-Bromofluorobenzene	100%	100%	103%	100%	99%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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ESN Job Number: S41223-3
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Client Job Name: SILVERNAIL LAKE

Analytical Results

8270, µg/L	MTH BLK		LCS SAMPLE 3		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	01/06/05	01/06/05	01/06/05	01/06/05	01/06/05	
Date analyzed	Limits	01/06/05	01/06/05	01/06/05	01/06/05	01/06/05	
Pyridine	2.0	nd		nd			
Aniline	2.0	nd		nd			
Phenol	2.0	nd		nd			
2-Chlorophenol	2.0	nd		nd			
Bis (2-chloroethyl) ether	2.0	nd		nd			
1,3-Dichlorobenzene	2.0	nd		nd			
1,4-Dichlorobenzene	2.0	nd	92%	nd	93%	100%	7%
1,2-Dichlorobenzene	2.0	nd		nd			
Benzyl alcohol	2.0	nd		nd			
2-Methylphenol (o-cresol)	2.0	nd		nd			
Bis (2-chloroisopropyl) ether	10.0	nd		nd			
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd			
Hexachlorethane	2.0	nd		nd			
N-Nitroso-di-n-propylamine	2.0	nd		nd			
Nitrobenzene	2.0	nd		nd			
Isophorone	2.0	nd		nd			
2-Nitrophenol	10.0	nd		nd			
4-Nitrophenol	10.0	nd		nd			
2,4-Dimethylphenol	2.0	nd		nd			
Bis (2-chloroethoxy) methane	2.0	nd		nd			
2,4-Dichlorophenol	10.0	nd		nd			
1,2,4-Trichlorobenzene	2.0	nd		nd			
Naphthalene	2.0	nd		nd			
4-Chloroaniline	10.0	nd		nd			
Hexachlorobutadiene	2.0	nd	110%	nd	135%	128%	5%
4-Chloro-3-methylphenol	10.0	nd		nd			
2-Methylnaphthalene	2.0	nd		nd			
1-Methylnaphthalene	2.0	nd		nd			
Hexachlorocyclopentadiene	2.0	nd		nd			
2,4,6-Trichlorophenol	10.0	nd		nd			
2,4,5-Trichlorophenol	10.0	nd		nd			
2-Chloronaphthalene	2.0	nd		nd			
2-Nitroaniline	10.0	nd		nd			
1,4-Dinitrobenzene	10.0	nd		nd			
Dimethylphthalate	2.0	nd		nd			
Acenaphthylene	0.2	nd		nd			
1,3-Dinitrobenzene	10.0	nd		nd			
2,6-Dinitrotoluene	2.0	nd		nd			
1,2-Dinitrobenzene	2.0	nd		nd			
Acenaphthene	0.2	nd	95%	nd	123%	116%	6%
3-Nitroaniline	10.0	nd		nd			
Dibenzofuran	2.0	nd		nd			
2,4-Dinitrotoluene	2.0	nd		nd			
2,3,4,6-Tetrachlorophenol	2.0	nd		nd			
2,3,5,6-Tetrachlorophenol	2.0	nd		nd			
2,4-Dinitrophenol	10.0	nd		nd			
Fluorene	0.2	nd		nd			

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Analytical Results

8270, µg/L	MTH BLK		LCS SAMPLE 3		MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	01/06/05	01/06/05	01/06/05	01/06/05	01/06/05	
Date analyzed	Limits	01/06/05	01/06/05	01/06/05	01/06/05	01/06/05	
4-Chlorophenylphenylether	2.0	nd		nd			
Diethylphthalate	2.0	nd		nd			
4-Nitroaniline	10.0	nd		nd			
4,6-Dinitro-2-methylphenol	10.0	nd		nd			
N-nitrosodiphenylamine	2.0	nd	81%	nd	93%	89%	4%
Azobenzene	2.0	nd		nd			
4-Bromophenylphenylether	2.0	nd		nd			
Hexachlorobenzene	2.0	nd		nd			
Pentachlorophenol	10.0	nd		nd			
Phenanthrene	0.2	nd		nd			
Anthracene	0.2	nd		nd			
Carbazole	2.0	nd		nd			
Di-n-butylphthalate	2.0	nd		nd			
Fluoranthene	0.2	nd	109%	nd	132%	128%	3%
Pyrene	0.2	nd		nd			
Butylbenzylphthalate	2.0	nd		nd			
Bis(2-ethylhexyl) adipate	2.0	nd		nd			
Benzo(a)anthracene	0.2	nd		nd			
Chrysene	0.2	nd		nd			
Bis (2-ethylhexyl) phthalate	2.0	nd		nd			
Di-n-octyl phthalate	2.0	nd	123%	nd	133%	122%	9%
Benzo(b)fluoranthene	0.2	nd		nd			
Benzo(k)fluoranthene	0.2	nd		nd			
Benzo(a)pyrene	0.2	nd	111%	nd	133%	122%	9%
Dibenzo(a,h)anthracene	0.2	nd		nd			
Benzo(ghi)perylene	0.2	nd		nd			
Indeno(1,2,3-cd)pyrene	0.2	nd		nd			
Surrogate recoveries							
2-Fluorobiphenyl		117%	107%	100%	123%	106%	
4-Terphenyl-d14		126%	120%	120%	125%	111%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

Acceptable Recovery limits:

2-Fluorophenol: 10-112 %
Phenol - d5: 10-85 %
2,4,6- tribromophenol: 29-159%
Nitrobenzene - d5: 20-120 %
2-Fluorobiphenyl: 50-150%
p-Terphenyl-d14: 50-150%
Acceptable RPD limit: 35%

CHAIN-OF-CUSTODY RECORD

Turn Around Time: 24 HR 48 HR 5 DAY

POST REHABILITATION FORM

1. Lake or Stream Rocky Lake County Stevens
Section 34 Township 35N Range 39E
2. Lakes - surface acres 20 Miles of inlet/outlet 0
3. Maximum depth 28ft Average depth 15 ft.
4. Weight (pounds) of water treated 7.8x 10/8 toxicant Rotenone powder
5. Amount used 650# .; 7.2 % active ingredient
6. Concentration applied 1 P.P.M. Date treated 10/26/04
7. Man-hours expended in preparation, treatment & cleanup 34 hrs
8. Conditions in the lake on date of treatment: Air temp. cool.
Slight breeze. Sunny.

<u>Depth in ft.</u>	<u>Temperature</u>	<u>PH</u>	<u>Dissolved oxygen</u>
<u>Surface</u>	<u>50F</u>	<u>Hydrolab inoperable</u>	

9. Species of fish eradicated in order of relative abundance: Pumpkinseed
sunfish 100%.
10. Possibility of a complete kill: 100%
11. Detoxicant used None
12. Period of toxicity 4-6 weeks
13. Description of treatment and other comments: One airboat and one pumper
boat were used, operated by four personnel. Application was slow due to
extensive shallow areas. On 10/27/04 there were no live fish visible.
Numerous size classes of sunfish were visible on the lake bottom. There were
at least five length groups from 0.5" to 5". The largest fish were the least
abundant.

<u>Curt Vail</u>	<u>10/28/04</u>	<u>Region Number I</u>
<u>Fishery Biologist</u>	<u>Date</u>	

Department of Ecology
Water Quality Program

JUN 01 2005

POST REHABILITATION FORM

1. Lake or Stream Ellen lake County Ferry
Section 26 Township 35N Range 36E
2. Lakes - surface acres 82 Miles of inlet/outlet 0
3. Maximum depth 32ft Average depth 14ft.
4. Weight (pounds) of water treated 2.8x10/9 toxicant Rotenone powder
5. Amount used 1950 # .; 7.2 % active ingredient
6. Concentration applied 1 P.P.M. Date treated 10/26/04
7. Man-hours expended in preparation, treatment & cleanup 88.
8. Conditions in the lake on dat of treatment:

Depth in ft.	Temperature	PH	Dissolved oxygen
Surface	50F	<u>Hydrolab inoperable</u>	
9. Species of fish eradicated in order of relative abundance:
Largemouth bass, rainbow trout. 99% bass.
10. Possibility of a complete kill: 100%
11. Detoxicant used None
12. Period of toxicity 4-6 weeks
13. Description of treatment and other comments: Treatment was routine.
Trout and bass sank soon after death. Few rainbow were seen on 10/27. No
large bass were seen. Rainbow were 14-18".

Curt Vail 10/28/04 Region Number I
Fishery Biologist Date

